

five inch omni-directional blade antenna) "significantly reduces costs to the public"<sup>31/</sup> because it is substantially smaller, less complex, and thus less expensive than the phased-array antenna that must be installed on-board aircraft in order to provide service by satellite. This smaller antenna also reduces costs and thus constitutes a beneficial improvement for airline customers because it is much easier to install than a phased-array antenna, does not interface with the aircraft navigation/INS system, weighs less than a phased-array antenna, and does not require a beam steering processor.

Third, both the diversity combiner and the handover circuitry described above "reduces costs"<sup>32/</sup> by allowing In-Flight to provide service more economically than is possible by using satellite. The combiner circuitry reduces the cost of ground stations since the power amplifiers do not need to provide as much link margin, and the handover circuitry reduces cost by making a cellular airborne entertainment system feasible (any practical ground-based transmission system must be cellular in nature due to the limited line-of-sight range to aircraft).

Finally, in order to maximize the number of channels of audio programming provided to airline passengers in the 500 kHz available to In-Flight pursuant to its experimental license, In-Flight will use highly bandwidth-efficient quadrature amplitude modulation ("QAM") and state-of-the-art audio bandwidth compression with

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<sup>31/</sup> Id.

<sup>32/</sup> Id.

statistical multiplexing of audio channels; these techniques will produce a very high speed of audio information transfer and thus yield "efficiencies in spectrum use".<sup>33/</sup> This high degree of bandwidth efficiency is typically not achievable via satellite broadcast system. This is because satellite transponder power amplifiers generally do not operate with the very high degree of linearity required for very highly bandwidth-efficient signals since such signals generally contain amplitude-encoded information as well as phase-encoded information.

II. The FCC Should Award In-Flight a Nationwide Preference Because the Commission Already Has Held that the Type of Service In-Flight Proposes Inherently is Nationwide in Scope, and the Service Uses So Little Spectrum In Any Event that the Commission, If It Desires, Could Issue Two Licenses to Provide It

In adopting pioneer's preference rules, the FCC held that, while it generally would award a licensing preference only for a single regional area, it would award a nationwide preference where the service justifying the preference inherently is nationwide in character.<sup>34/</sup> The Commission later held that it also might award a nationwide preference for a service which is not inherently nationwide if the agency adopts licensing rules governing the service which promote competition by allowing the issuance of two or more nationwide licenses.<sup>35/</sup>

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<sup>33/</sup> Id.

<sup>34/</sup> See Report and Order in GEN. Dkt. No. 90-217, supra, 6 FCC Rcd. at 3495.

<sup>35/</sup> See Notice of Prop. Rulemaking and Tent. Decision in GEN. Dkt. No. 90-314 and ET Dkt. No. 92-100 at ¶ 151 (rel. Aug. 14, 1992).

In-Flight's application for pioneer's preference plainly meets the FCC's announced criteria for justifying a nationwide preference. Although many paging and data communications services encompassed within the proposed 900 MHz PCS service may be regional in character, the Commission already has ruled that telecommunications services for airline passengers are inherently nationwide:

"[I]n contrast to the cellular radio service, the air-ground service is inherently nationwide in scope as many airlines today serve large portions of the United States rather than a single region. Indeed, any attempt to regionalize. . . [such] service would be arbitrary.<sup>36/</sup>

Moreover, even if the service proposed by In-Flight were not inherently nationwide in scope, a nationwide preference still would be justified because the FCC has proposed as one alternative the adoption of licensing rules for the new 900 MHz PCS service which would permit the issuance of several nationwide licenses.<sup>37/</sup> Within this nationwide licensing structure, the Commission clearly could award two or more nationwide licenses for the provision of live audio programming to airline passengers since each licensee needs less than 0.1 percent of the total amount of spectrum contained in the proposed PCS service at any particular geographic

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<sup>36/</sup> See Report and Order in GEN. Dkt. No. 88-96, 5 FCC Rcd. 3861, 3869 (1990); recon. 6 FCC Rcd. 4582 (1991).

<sup>37/</sup> See Notice of Prop. Rulemaking and Tent. Decision in GEN. Dkt. No. 90-314 and ET Dkt. No. 92-100, supra. at ¶¶ 56-62.

area (i.e., 81.3 kHz of the 93 MHz of spectrum that the FCC has proposed to allocate to the PCS service).

III. It Would Be Arbitrary and Capricious for the Commission To Deny In-Flight a Preference Since In-Flight's Service Contains at Least as Much Innovation as the Services of Two Applicants Who Already Have Been Tentatively Granted Preferences

It would be unlawful for the Commission to deny a pioneer's preference to In-Flight because In-Flight's innovations are equal to, if not greater than, the innovations of Mobile Telecommunication Technologies Corp. ("Mtel") and Volunteers in Technical Assistance ("VITA"), both of whom already are tentative preference recipients.<sup>38/</sup>

The FCC has decided tentatively to award a pioneer's preference to Mtel for its proposal to offer more two way paging service functions based on Mtel's development of a bit transmission rate which exceeds by tenfold the present state-of-the-art bit transmission rate used by paging systems.<sup>39/</sup> Similarly, the Commission has decided tentatively to award a pioneer's preference to VITA because it was the first seriously to study providing communications services via low-Earth orbit satellites, and it developed a technology allowing direct terminal-to-terminal

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<sup>38/</sup> See, e.g., Int'l Union v. NLRB, 459 F. 2d 1329, 1341 (1972) ("It is an elementary tenet of administrative law that an agency must either conform to its own precedents or explain its departure from them.")

<sup>39/</sup> Notice of Prop. Rulemaking and Tent. Decision, GEN. Dkt. No. 90-314 and ET Dkt. No. 92-100, supra, at ¶ 149.

operations to replace gateway operations, thus permitting service to be provided more cheaply.<sup>40/</sup>

For three reasons, the live audio service for airline passengers that In-Flight proposes is at least as innovative as the services proposed by Mtel and VITA. First, while Mtel and VITA proposed merely to improve certain communications services which already exist, In-Flight developed a new communications service that previously was unavailable in any form in a mobile market of 1.25 million people. Second, technologies developed by In-Flight (i.e., technologies eliminating multipath fading and ensuring undetectable handoff between ground stations) are at least as innovative as the technology developed by Mtel which allows more rapid data transmission and by VITA which allows direct terminal-to-terminal operations by certain satellite systems. Finally, whereas the Commission tentatively awarded preferences to Mtel and VITA without finding that their respective technological innovations would allow provision of any service more economically or more spectrum efficiently than otherwise is possible, In-Flight has proved that, due to its technological innovations, live audio programming can be transmitted to aircraft more economically and more spectrum efficiently by using ground-to-air technology rather than satellite technology.

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<sup>40/</sup> Tent. Dec. in ET Dkt. No. 91-280, FCC Rcd. 1625, 1627 (1992).

### CONCLUSION

For the three reasons described in Section I above, the Commission should grant a pioneer's preference to In-Flight in the 900 MHz PCS licensing process for its live multi-channel audio information and entertainment service for airline passengers. Moreover, as explained in Section II, in-Flight's preference should be for a nationwide license rather than for a regional license. Finally, as explained in Section III, failure to grant the requested preference would be unlawful since the FCC already tentatively has granted preferences to two companies whose service proposals are no more innovative than that of In-Flight.

Respectfully submitted,

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